12. (Amended) A method for producing a soluble PHEX enzyme or an inactive mutant thereof, which comprises the steps of:

- allowing the eukaryotic host of claim 10 to express said nucleic acid, and
- recovering the soluble PHEX enzyme or mutant thereof as a secretion product of said host.

A2

13. (Amended) An antigenic composition, which comprises the enzyme of claim 1.

14. (Amended) An antibody capable of binding to PHEX and raised against the enzyme of claim 1 or fragment thereof.

19. (Amended) A hybridoma producing the antibody of claim 16.

20. (Amended) A composition comprising the enzyme of claim 1 or the nucleic acid as defined above and a pharmaceutically acceptable carrier.

A3

21. (Amended) A composition comprising the enzyme of claim 3 and a pharmaceutically acceptable carrier.

22. (Amended) A composition comprising the antibody of claim 14 and a

pharmaceutically acceptable carrier.

A3

23. (Amended) A diagnostic reagent for detecting the presence or amount of PHEX, comprising the antibody of claim 14.

CONT.

24. (Amended) A diagnostic kit for detecting the presence or amount of PHEX comprising the antibody of claim 14.

A4

26. (Amended) A method for detecting the presence or an amount of PHEX in a sample, which comprises the steps of:

· contacting said sample with the antibody of claim 14 in conditions such that the immune complex can form; and

· detecting the immune complexes as an indication of the presence or amount of PHEX in said sample.

27. (Amended) A device for purifying PHEX or a mutant thereof which comprises the antibody of claim 14.

28. (Amended) A device for screening PHEX ligands, which comprises the soluble PHEX enzyme or a mutant thereof as defined in claim 1.

A5

33. (Amended) A method for obtaining a PHEX ligand which comprises the

steps of:

- contacting a sample containing one or more molecules with a PHEX enzyme or mutant as defined in claim 1 in conditions such that binding of said one or more molecules with PHEX can occur;
- detecting said binding as an indication of the presence of a PHEX ligand in said sample; and
- selecting said PHEX ligand.

37. (Amended) A method for evaluating PHEX activity in a sample which comprises the steps of contacting the sample with a substrate as defined in claim 35 , or preferably with PTHrP107-139, in substantially phosphate-free conditions and observing the apparition of a cleavage product of said substrate or PTHrP107-139 as an indication of PHEX activity in the sample.

39. (Amended) A method for evaluating the activity of a molecule for its capacity of being an inhibitor of PHEX comprising the steps of:

contacting said molecule with a substrate as defined in claim 35 , or preferably with PTHrP107-139, and the PHEX enzyme of claim 1 in substantially phosphate-free conditions; and

observing an inhibition of the formation of a cleavage product as an indication that said molecule is a PHEX inhibitor.

A7 CONT

40. (Amended) A kit for executing the method of claim 35.